Proposed Plan for the Taylor Lumber and Treating Superfund Site

Sheridan, Oregon
July 2005

INTRODUCTION

This Proposed Plan identifies the preferred cleanup alternative for contaminated soil and groundwater at the Taylor Lumber and Treating (TLT) Superfund Site in the City of Sheridan, Oregon. In addition, this Plan includes summaries of other cleanup alternatives evaluated for use at this site, and the rationale for selecting the preferred alternative. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities. The Oregon Department of Environmental Quality (DEQ) is the support agency. EPA, with input from DEQ, will make a final remedy selection after public comments are reviewed and considered.

The TLT Superfund Site is a wood-treating facility and a former sawmill located in the outskirts of Sheridan near the South Yamhill River (Figure 1). The TLT facility ceased operation in 2001 and filed for bankruptcy. In 2002, Pacific Wood Preserving of Oregon (PWPO) bought the property associated with the wood-treating facility, referred to as the West Facility. PWPO is currently operating a new wood-treating facility using primarily copper- and borite-based treating solutions.

This Proposed Plan focuses on contamination due to past operations by TLT. Wood-treating chemicals and wastes, including polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), arsenic, and dioxins/furans, were the primary contaminants found and studied at the site.

Cleanup action is necessary within approximately 40 acres of TLT's former wood-treating area, which is generally referred to as the "West Facility" (Figure 2). Contamination poses a risk to people that contact the soil and to animals that are exposed to the contamination in roadside ditches. Groundwater is also

contaminated and would pose a risk to people drinking it. Currently, the groundwater is not used for drinking water and is largely contained within an underground barrier wall built in 2000. Studies show that environmental impacts to the sawmill area (East Facility) are much less than to the West Facility. The focus of the cleanup action in this Proposed Plan is on the West Facility, where action is warranted under Superfund. DEQ is continuing to evaluate the need for cleanup actions outside the West Facility.

The proposed cleanup for the TLT site includes the following: excavation and consolidation of contaminated soils from within the West Facility area and placement under an asphalt cap, possibly in the northeast corner of the property (an approximately 7.7-acre cap); excess soil that is not placed under the cap may be sent to an off-site disposal facility if cost-effective; continued operation and maintenance of the existing barrier wall that contains contaminated soils and groundwater; extraction and treatment of groundwater from within the barrier wall; construction of a new 4.6-acre asphalt cap above the existing barrier wall; extraction of PCP-contaminated groundwater from areas outside the barrier wall and treatment of that groundwater in the existing water treatment system at the site (pending ongoing technical evaluations, an alternative relying on institutional controls and monitoring may be selected); implementation of institutional controls to protect the remedy and ensure that onsite workers do not contact the contaminated material beneath the cap; and, long-term monitoring as necessary to ensure protection of human health and the environment.

This Proposed Plan is being issued as part of EPA's public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Plan summarizes information that can be found in greater detail in the Remedial Investigation (RI) and the Feasibility Study (FS) reports and other documents contained in the Information Repositories (see below for locations). Additionally, an Administrative Record, which is a formal collection of documents EPA relies on when making cleanup decisions, will be available July 28 for review at the Sheridan Public Library and at the Records Center, EPA Region 10, Seattle, Washington. The public is encouraged to review these documents to gain a more comprehensive understanding of the site and the activities that have been conducted to date and to comment on the cleanup

alternatives. New information provided during the public comment period could result in a final remedial action that differs from the preferred alternative.

Public Comment Period - July 28 - August 26: The U.S. Environmental Protection Agency (EPA) will accept written comments on the Proposed Plan until August 26, 2005. Written comments should be addressed to:

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Contents of this Plan

For More Information: Copies of documents that were used to develop this plan, including the Remedial Investigation report, Feasibility Study report, and other information about the TLT Superfund Site cleanup can be reviewed at the Sheridan Public Library (142 NW Yamhill Street, Sheridan) or by contacting Renee Dagseth, EPA Community Relations Coordinator, at 206-553-1889.

Information about the TLT Superfund Site is available on EPA's website by going to www.epa.gov/r10earth, then click on the index, and then Taylor Lumber and Treating.

SITE BACKGROUND

TLT operated a wood-treating facility and a sawmill located approximately 1 mile west of the City of Sheridan within the South Yamhill River Valley in northwest Oregon (Figures 1 and 2). The wood-treating facility, which operated from 1966 to 2001, is located west of Rock Creek Road and is generally referred to as the "West Facility." The sawmill, which operated from 1946 to 2001, is located east of Rock Creek Road and is generally referred to as the "East Facility." TLT filed bankruptcy on June 11, 2001, and the wood-treating facility ceased operations on July 20, 2001. TLT was placed on EPA's Superfund National Priorities List on

June 14, 2001. PWPO purchased the wood-treating facility and began wood-treating operations in June 2002. Other entities purchased the remaining portions of the former TLT holdings.

Historically, the predominant activity by TLT was the treatment of douglas fir logs for utility poles and pilings. The primary wood-treating chemicals that were used by TLT included creosote, pentachlorophenol (PCP), and Chemonite (a solution of arsenic, copper, zinc, and ammonia).

The wood treatment cycle at TLT involved moving peeled poles from the White Pole Storage Area to the Dryer, where excess moisture was removed. The wood was then treated with chemicals under heat and pressure in the retorts in the Treatment Plant Area. Following treatment, poles were placed over a gravel drip pad in the Treatment Plant Area and subsequently stored in the Treated Pole Storage Area until shipment. Most of the contamination at the TLT facility occurred in and around the Treatment Plant and Treated Pole Storage Areas and was associated with the drip pad, spills from the storage tanks, and storage of treated poles. Surface soils were contaminated, and a significant volume of treatment chemicals migrated into the soil and groundwater beneath the Treatment Plant Area. In this area, subsurface soils are contaminated with coal tar creosote and with pentachlorophenol and its carrier oil. In their pure phase, these products will both sink and/or float when contacting groundwater. The floating material is referred to as "light non-aqueous phase liquid" (LNAPL), and the sinking material is referred to as "dense non-aqueous phase liquid" (DNAPL). At TLT, the groundwater is contaminated with DNAPL and dissolved constituents. LNAPL has not been identified at the site.

Historically, TLT discharged untreated stormwater to the South Yamhill River. Stormwater discharged by TLT was regulated by a series of permits since the early 1960s. TLT eventually constructed a stormwater treatment plant. Today, PWPO's discharge is subject to a National Pollutant Discharge Elimination System (NPDES) permit issued by the DEQ in 2004. This permit places wastewater discharge limits on several parameters including arsenic, copper, zinc, and PCP.

The areas investigated under the Superfund studies included all of the West and East Facilities and adjacent areas that may have been impacted by activities at the site. Soil from the facilities, soil from nearby residential yards, soil from ditches,

groundwater from onsite and offsite wells, sediment and surface water from the South Yamhill River and Rock Creek, and air were studied to find where there was contamination associated with the site. Results showed that the approximately 40-acre wood-treating facility incurred much greater environmental impacts than the sawmill. Thus, the focus of the proposed cleanup action is on the West Facility.

Cleanup Activities Completed to Date

A number of state and federal environmental investigations have occurred at TLT. Groundwater sampling began in 1988 and was followed by further soil and groundwater investigations. Based on results of these investigations, EPA conducted two Superfund early actions and has plans for an additional Superfund action in Summer 2005 (Figure 3). These early actions were performed pursuant to EPA Superfund removal authorities, and are referred to as "Removal Actions" in site documents. More details are provided below.

Early Action (1999-2000) - Based on the results from the 1999 Integrated Assessment, EPA's Emergency Response Team conducted a significant early action at the TLT site from November 1999 to November 2000. Within the Treatment Plant Area, an underground barrier slurry wall was constructed around a 4.6-acre area. The barrier wall contains the wood-treating chemicals and oil located in the soil and groundwater beneath that area and prevents the migration of contaminated groundwater towards the South Yamhill River. The barrier wall is approximately 2.5 ft wide, 20 ft deep, and approximately 2,100 linear feet. A 4-inch-thick asphalt cap was built over the area enclosed by the barrier wall, and four extraction wells were installed inside the barrier wall to maintain an inward hydraulic gradient which will prevent outward seepage of groundwater. A second asphalt cap was constructed in the Treated Pole Storage Area to cover approximately 2 acres of arsenic-contaminated surface soils to protect onsite workers and to control offsite contaminant transport.

Excess soil and material from the barrier wall construction and stockpiles of potentially contaminated soils were consolidated onsite in temporary Soil Storage Cells located in the northwest corner of the facility. Approximately 20,000 cubic yards of material were temporarily stored in these cells for future handling as part of the remedial action.

During this same period, TLT constructed a stormwater treatment system to collect and treat surface water runoff from the Treated Pole Storage Area and Treatment Plant Area.

Early Action (2004) - During TLT's wood treatment operations, airborne contamination from fugitive dust impacted adjacent properties. Soil samples were collected from nearby residential yards in 1999 and in 2002. Soil contamination by dioxins/furans was found to present unacceptable risk to residents at only one property (b) (6)) located directly east of the former TLT wood-treating facility. In November 2004, EPA conducted an early action at this residence (Figure 3). Approximately six inches of surface soil, gravel, and grass were excavated from the front and side yards and replaced with clean topsoil and grass. Approximately 510 tons of materials were removed and disposed of at an offsite landfill.

Early Action (2005) - In Summer 2005, EPA is scheduled to excavate approximately 500 to 700 cubic yards of soils (approximately 5 ft wide by 1 ft deep) from the ditch that parallels the eastern side of Rock Creek Road (Figure 2). This ditch is approximately 850 lineal ft and crosses through the residential yard that was cleaned up in 2004. Because this cleanup will be conducted as an early action, remediation of this ditch is not covered by this Proposed Plan.

SCOPE AND ROLE

This is the final and only remedial action being proposed for the TLT Site. There are no other operable units.

A completed early action addressed remediation of the source materials, which included contaminated soil and DNAPL in former wood-treating areas, by installation of an underground barrier wall and placement of an overlying asphalt cap. These source materials constitute principal threat wastes at the site. Offsite contaminant transport via airborne dust was addressed in the early action by paving. A second completed early action eliminated the threat to people from contaminated surface soils at an adjacent residence, and an early action scheduled for Summer 2005 will eliminate the threat to animals that may inhabit the contaminated ditch on the east side of Rock Creek Road. Thus, the scope of the problem addressed by this Proposed Plan focuses on the West Facility where there

are unaddressed contamination issues and on ensuring the long-term protectiveness of the barrier wall and associated cap, as well as on evaluating alternatives for remaining contaminated soils and groundwater outside the barrier wall.

This site is in productive re-use. Pacific Wood Preserving of Oregon (PWPO) is operating under a DEQ NPDES permit for wastewater discharge and a DEQ air permit. PWPO is also subject to and must comply with all applicable RCRA and the State of Oregon Dangerous Waste requirements, including those for addressing the generation, treatment, storage, and disposal of hazardous waste. These regulations are independent of any Superfund action.

SITE CHARACTERISTICS

The TLT site is located within Yamhill County (zoned heavy industrial) and a small portion of the site is located within limits of the City of Sheridan (zoned light industrial). The 40-acre West Facility area is an active wood-treating facility, and the reasonably anticipated future land use is industrial. Most of the site is covered with gravel, asphalt, and structures. Current and past land use practices make this area unsuitable for most plants and wildlife. The roadside ditches adjacent to TLT are dry in the summer and do not support fish populations. Ecological habitat occurs in the nearby Rock Creek and South Yamhill River. Groundwater is not used for drinking water. Downgradient of the site, all residences are currently using water from the City of Sheridan's municipal supply.

EPA prepared a Remedial Investigation (RI) and Feasibility Study (FS) for the site. Using historical and new data, the RI/FS identified the types, quantities, and locations of contaminants and developed ways to address the remaining contamination problems. Surface soils, subsurface soils, ditch soils/sediments, groundwater, surface water, sediments, and air on the TLT property and surrounding areas were sampled. These surrounding areas included nearby residences, ditches, Rock Creek, the South Yamhill River, and background areas.

The RI indicated that:

- Surface soils within portions of the West Facility are contaminated with arsenic and dioxins/furans. The highest contaminant concentrations occur in the north and northeast corner of the Treated Pole Storage Area, in the southern boundary of the White Pole Storage Area, and in the southeast corner of the Treatment Plant Area. Subsurface soil contamination occurs only within the barrier wall.

- Soil within roadside ditches is contaminated with arsenic and dioxins/furans.

- Groundwater within the barrier wall is contaminated with pentachlorophenol, dioxins/furans, and DNAPL. Some residual PCP-contaminated groundwater exists outside the barrier wall within the West Facility.

Surface soil contamination due to dioxins/furans was found to present unacceptable risk to residents at only one property ((b) (6)), which underwent an EPA cleanup in 2004.

No contaminants of concern associated with activities at the TLT site were identified in surface water and sediments from Rock Creek and South Yamhill River. Given the completed early actions, off-site transport of contaminants via airborne dust was not identified as an ongoing problem.

SUMMARY OF SITE RISKS

EPA conducted human health and ecological risk assessments and looked carefully at potential pathways that might expose people or wildlife to contamination associated with the TLT site. The exposure scenarios evaluated for people are summarized in Table 1 and those for animals and plants are summarized in Table 2. The major findings of the risk assessments are as follows:

- Soil - In surface soils, the chemicals of concern are arsenic and dioxins/furans. Under current and future conditions, these contaminants pose a risk to onsite workers who come into contact with soils and to

ecological receptors in certain roadside ditches. These ditches are highly disturbed but may support plant and wildlife species tolerant of man-made disturbance. Ecological risk was not identified for the majority of the facility, because it is covered with gravel, asphalt, and/or structures and is considered unsuitable for most plants and wildlife.

- Contaminated Media Inside the Barrier Wall - Contaminated media inside the barrier wall poses a risk to people that may come into contact with the groundwater or soils under both current and future use. The chemicals of concern for soil are dioxins, PAHs, PCP, and arsenic. In groundwater they are dioxins, arsenic, PCP, and PAHs. The DNAPL chemicals of concern are PAHs and PCP.

- Groundwater Outside the Barrier Wall - The chemical of concern is pentachlorophenol. Groundwater extracted from wells located outside the barrier wall exceeded EPA's acceptable cancer risk level and is not suitable for domestic use without treatment. This area occurs in the West Facility, in the area surrounding the barrier wall, with the highest concentrations south and east of the barrier wall.

- Off-Property Groundwater - Chemical concentrations in groundwater extracted from wells downgradient of the property do not exceed EPA's acceptable cancer risk levels under current or future use scenarios, and are below the federal drinking water standards for site-related constituents.

- Off-Property Residential Soil - Following EPA's early actions and the low chemical concentrations found in soil from a recent April 2005 sampling effort, there is no unacceptable risk to people in nearby residential settings that could result from current and future contact with contaminated soils.

- Off-Property Sediments and Surface Water - Considering current and reasonably anticipated future land use conditions, and assuming that contamination from the site is contained and does not migrate off-site, potential risks posed to people and aquatic life or wildlife associated with exposure to sediments and surface water in the Rock Creek and South Yamhill river will remain very low. These media do not warrant remediation.

EPA believes that the Preferred Alternative or one of the other active measures considered in this Proposed Plan is necessary to protect public health and welfare and the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) provide a general description of the goals that the cleanup actions are expected to accomplish. The RAOs for the TLT site are as follows:

- Maintain the underground barrier wall that contains contaminated soil and groundwater to prevent migration of the DNAPL and contaminated groundwater outside of the wall

- Reduce or eliminate human exposure through direct contact (incidental soil ingestion, skin contact with soil, and inhalation of dust) with contaminated soils that exceed protective regulatory levels

- Reduce or eliminate risks to ecological receptors from contaminated soils in ditches

- Eliminate human exposure to groundwater with contaminant concentrations that exceed federal drinking water standards

- Minimize future migration of contaminated groundwater to adjacent surface water (Rock Creek, South Yamhill River) to protect ecological receptors.

In the West Facility, all surface soils with concentrations above 159 ppm arsenic will be addressed by active remediation. This concentration for surface soils is based on standard EPA risk exposure assumptions for protecting industrial workers at the 10^{-4} excess cancer risk level and DEQ's 10^{-4} risk level defining "hot spots" requiring action. Co-occurring dioxins/furans will be cleaned up at the same time. In addition, an estimated 0.9-acre area in the southwestern portion of the West Facility will be cleaned up based on elevated concentrations of dioxins/furans (2.1 ppb) at one station, and concerns about soils in this area washing into an adjacent ditch that leads to surface waters. For less-contaminated soils between 10^{-4} and 10^{-6} excess

cancer risk levels, which are considered "non-hot spots" under DEQ regulations, EPA proposes implementation of institutional controls. The proposed cleanup level for groundwater outside the barrier wall is 1 ug/L pentachlorophenol, which is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.

SUMMARY OF CLEANUP ALTERNATIVES

Cleanup alternatives for the TLT site are presented below. The alternatives are numbered to correspond with the numbers in the RI/FS report. EPA has chosen a preferred alternative for the TLT site, which includes a combination of Soil Alternative SO-2, Groundwater Alternative GW-3, and Barrier Wall Alternative BW-4.

Common Elements. Many of these alternatives include common components. Alternatives assume that the completed early actions remain effective and in place (e.g, it is assumed that the barrier wall will remain in place; groundwater extraction and treatment will occur; the stormwater water treatment system will continue to operate, etc.).

> ***Soils***: Soil alternatives apply to soils outside the barrier wall. Per federal regulations, EPA considered remediation for soils that posed excess cancer risks greater than 1 in 10,000 (10^{-4}), which is also considered a "hot spot" contamination area requiring action under DEQ regulations. For less-contaminated soils between 10^{-4} and 10^{-6} excess risk levels (defined as "non-hot spots" under DEQ's regulations), EPA considered the use of institutional controls to protect human exposure.
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> ***Roadside ditches***: Although not all portions of each ditch are contaminated, all roadside ditches highlighted in Figure 3 will be cleaned to simplify the ditch remediation effort. Given the relatively small volume of ditch soils, EPA is proposing that the ditches simply be remediated without spending additional time and funds to define specific cleanup areas and cleanup levels. Post-cleanup data will be collected to ensure that the ditches do not pose unacceptable risk to people or animals after the cleanup.

Institutional controls: Institutional controls consist of administrative measures to provide a level of protection against exposure and to advise current and future property users about the existing contamination. Potential institutional controls that may be used at the site include governmental (e.g., maintaining industrial zoning), enforcement (e.g., legal agreements requiring cap maintenance), and proprietary (e.g., environmental easements). Institutional controls may require that workers not dig through the asphalt cap unless wearing protective equipment or may limit land use (e.g., to industrial use only). These restrictions are discussed in each alternative as appropriate. The goals of institutional controls, as well as potential mechanisms (e.g., environmental easements), will be clearly described in the ROD.

Monitoring: Most alternatives include long-term monitoring to ensure that the remedy remains protective of human health and the environment.

Costs for each alternative (except "no action") are shown in Table 3 and are presented as total present value (2004). Costs shown for the operation and maintenance category are based on 30 years, although the actual period could be much longer in some cases. Costs for the FS were calculated using a discount rate of 7 percent over a 30-year operation period. Estimated costs have a plus 50 to minus 30 percent accuracy.

No Action Alternatives

Alternative SO-1/GW-1/BW-1: No Action.

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated generally to establish a baseline for comparison. Under this alternative, EPA would take no action at the site to prevent human or ecological exposure to soil and groundwater contamination.

Soil Alternatives

Alternative SO-2: Excavation and Consolidation; Capping with Asphalt; Institutional Controls; Monitoring

This alternative includes excavating soils from approximately 1.4 acres to a depth of 1 foot in three areas of the West Facility: two northern ditches (0.1 acres, estimated); soils in the southeastern corner (0.4 acres, estimated); and soils in the southwestern corner (0.9 acres, estimated). These soils will be addressed along with the soils removed from the ditches along the west side of Rock Creek Road and along the southern portion of the West Facility and with the approximately 19,100 cubic yards of soils that are currently in the Soil Storage Cell Area. All these soils will be strengthened with additives, as necessary, to form a strong structural base and be placed within the West Facility area, possibly in the northeast corner in the Treated Pole Storage Area. If placed in the northeast corner, these soils would be covered with an approximately 7.7-acre asphalt cap that would extend over the entire Treated Pole Storage Area, including the 4.4-acre hot spot in the northeast corner, and the grade would be increased a maximum of 2 feet to match the existing grade in the 2-acre paved area. This alternative, which does not modify the 6.6 acres of the site that have been previously paved, results in about 14 acres of asphalt cap. The exact location of the area to be used for consolidating and capping will be determined at a later date, and site grades will be established in consideration of existing facility operations. All excavated areas would be backfilled with clean material to grade as appropriate to ensure compatible land use. If cost-effective, excess soils that are not placed onsite may be sent off site to an acceptable disposal facility. Institutional controls would be put in place to ensure cap maintenance and to restrict digging in the area. The area would be monitored to verify that the cap retains integrity and that institutional controls remain effective.

For the unpaved soils in the remaining portion of the site, institutional controls would be used to limit human exposure. Possible controls include ensuring land use remains industrial, requiring special precautions when digging in the area, and ensuring proper disposal or use of soils removed from the area.

Alternative SO-3: Excavation and Consolidation; Capping with Asphalt; Capping with Gravel; Institutional Controls; Monitoring

The components and requirements of this alternative are the same as those described in Alternative SO-2, with the exception that the unpaved soils in the remaining portion of the site would be covered with a geotextile liner system and then 12 inches of gravel.

Alternative SO-4: Excavation and Off-site Disposal; Capping with Gravel; Institutional Controls; Monitoring

This alternative considers excavation and offsite disposal (with treatment as necessary) for contaminated soils, including soils from the Treated Pole Storage Area (4.4 acres); two northern ditches (0.1 acres, estimated); the southeastern corner (0.4 acres, estimated); the southwestern corner (0.9 acres, estimated); the ditches west of Rock Creek Road and south of the West Facility; the Soil Storage Cell Area (19,100 cubic yards); and, the area under the existing 2-acre asphalt cap in the Treated Pole Storage Area. After excavation, all areas including ditches will be backfilled with clean material to meet existing grade. No institutional controls or monitoring would be necessary for this component of SO-4.

Unpaved soils in the remaining portion of the site would be covered with a geotextile liner system and then 12 inches of gravel. Institutional controls and monitoring in this area would be necessary as described in SO-2.

Groundwater Alternatives

These groundwater alternatives only apply to the groundwater that is outside the existing barrier wall and that exceeds the federal drinking water standard of 1 ug/L pentachlorophenol (PCP). This PCP contamination occurs in the area surrounding the barrier wall, with the highest concentrations south and east of the barrier wall. This contamination existed prior to installation of the wall, and does not indicate failure of the barrier wall. Current evidence indicates the PCP plume is not migrating off the West Facility and that the rate of groundwater migration is very slow, particularly in the area south of the barrier wall (which is closest to the river). DNAPL does not occur outside the barrier wall.

Groundwater contained within the barrier wall was addressed by a previous EPA action. Data indicate that the barrier wall is effectively containing DNAPL and groundwater contaminants. A natural competent confining layer exists beneath this area to protect deeper groundwater.

Alternative GW-2: Institutional Controls; Monitoring

This alternative requires the use of institutional controls to restrict pumping of groundwater for drinking water use. Monitoring would ensure that the institutional controls are effective. Long-term groundwater monitoring would ensure that the PCP plume does not migrate to adjacent surface waters (Rock Creek, South Yamhill River).

Alternative GW-3: Pump and Treat; Institutional Controls; Monitoring

This alternative is the same as GW-2, except that the groundwater outside the barrier wall with higher pentachlorophenol concentrations (e.g., 100 times the drinking water standard) would be extracted, treated in the existing onsite water treatment system, and discharged to the river under the existing permit. Areas of lower PCP contamination would be addressed indirectly as the contaminant plume is drawn toward the groundwater extraction wells. This alternative would also provide hydraulic containment, which would reduce the likelihood of contaminated groundwater reaching the adjacent surface waters. Pump and treat may occur for less than five years. Pending ongoing technical evaluations, this alternative may be omitted from the final remedy.

Alternative GW-4: Permeable Reactive Barrier; Institutional Controls; Monitoring

This alternative is the same as GW-2, except that the groundwater would be treated in place with a Permeable Reactive Barrier. It is assumed that the Permeable Reactive Barrier includes a new 400-foot section of a slurry barrier wall with three treatment "gates" containing activated carbon. Groundwater would flow passively through these treatment gates and contaminants would be intercepted, preventing potential contaminant migration to the adjacent surface waters. On-property groundwater contamination would not be altered. Successful implementation would require additional studies, favorable hydrogeologic

conditions, and significant groundwater modeling efforts to confirm the feasibility of this alternative.

Alternatives for Contaminated Media inside the Barrier Wall

Through previous early actions, the contaminated soil, groundwater, and DNAPL are contained inside a barrier wall, and a temporary asphalt cap covers the area enclosed by the wall. Some areas of the temporary cap have been damaged by the heavy equipment used onsite. Through extraction of groundwater from wells, hydraulic containment is used to prevent contaminants from migrating beyond the barrier wall and to lower water levels to ensure the structural integrity of the cap. Groundwater extracted from inside the barrier wall is currently treated in the onsite water treatment system and discharged under a state discharge permit to a ditch that flows to the South Yamhill River. The long-term protectiveness of these earlier actions was evaluated in developing alternatives for this area. Data indicate that the barrier wall and groundwater extraction system are effectively stopping groundwater and DNAPL migration. However, the present asphalt cap must be upgraded to provide protectiveness for human exposure. Thus, these alternatives focus on upgrades to the existing cap, which currently consists of 4 inches of asphalt over a 12-inch crushed rock base.

In the feasibility study, a fifth alternative (BW-5: Dynamic Underground Stripping) was considered as an aggressive attempt to remove "principal threat" contaminants contained within the barrier wall. This alternative was dropped from consideration because of high costs and concerns over implementability, and thus is not presented here.

Alternative BW-2: Cap Removal and Replacement with 12-inch Concrete Cap/Liner; Institutional Controls; Monitoring

The existing cap and subgrade would be removed and replaced by a new cap. The new cap would consist of a new subgrade, followed by a PVC liner (between layers of geotextile fabric), and then a 12-inch concrete cap with joints. The final grade would match the current grade.

Institutional controls would protect the new cap and limit human exposure, and monitoring would verify cap integrity, ensure effectiveness of institutional

controls, and ensure that the remedy remains protective of human health and the environment.

Alternative BW-3: Cap Repair with Asphalt and Placement of 8-inch Concrete Cap/Liner; Institutional Controls; Monitoring

Under BW-3, any damaged areas of the existing cap would be repaired with asphalt. Installed over this asphalt would be the same cap described for BW-2, except the concrete cap would be 8 inches. The final grade would be about 8 inches above current grade. Institutional controls and monitoring are the same as BW-2.

Alternative BW-4: Cap Repair with Asphalt/Concrete Subgrade and Placement of Asphalt Cap; Institutional Controls; Monitoring

The existing cap would be repaired by breaking up the top 8 inches of asphalt and crushed base rock, removing and mixing that broken-up material with a concrete binder, replacing the resulting mixture back onto the surface, and then compacting the mixture to form a subgrade. Next, a new engineered asphalt cap would be installed. The final grade would be about 4 inches above current grade. Institutional controls and monitoring are the same as BW-2.

EVALUATION OF ALTERNATIVES

EPA uses nine criteria to evaluate cleanup alternatives individually and against each other in order to select a remedy. This section describes the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. A more detailed analysis can be found in the Feasibility Study.

Overall Protection of Human Health and the Environment

Determines whether a remedial action eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

All of the alternatives (except "no action") would provide adequate protection of

human health and the environment by eliminating, minimizing, or controlling risk through treatment, engineering controls, and/or institutional controls. The "no action" alternative is not discussed further because it does not protect human health and the environment. For soils outside the barrier wall, SO-4 would be the most protective because contaminated soils would be removed from the site. The other alternatives are protective but would achieve Remedial Action Objectives by consolidating and capping contaminated soils in place and relying on institutional controls to reduce the potential for direct contact.

For groundwater outside the barrier wall, GW-2 would be the least protective because it relies on institutional controls to restrict exposure to humans, and it would be the least protective for controlling groundwater migration to the river. GW-4 would be slightly more protective because the permeable reactive barrier would intercept contaminated groundwater migrating off-property. GW-3 is the most protective because on-property groundwater concentrations would be reduced through extraction and treatment, and off-property migration would be controlled.

For contaminated media inside the barrier wall, BW-2, BW-3, and BW-4 are equally protective.

Compliance with State and Federal Regulations

Evaluates how each alternative complies with state and federal environmental laws and regulations that pertain to the site or whether a waiver is justified.

All alternatives would meet state and federal applicable or relevant and appropriate regulations (ARARs) for the portions of the site that are addressed under this Proposed Plan.

Long-term Effectiveness and Permanence

Considers the ability of a remedial alternative to maintain protection of human health and the environment over time and the reliability of such protection.

This criteria concerns two primary factors: the magnitude of residual risk remaining, and the adequacy and reliability of controls for risks remaining after

the cleanup action. For soils outside the barrier wall, the greatest long-term effectiveness is provided by removing all contaminated soils from the site (SO-4), and less long-term effectiveness is provided by capping, since capping requires more complex monitoring requirements (SO-2, SO-3). Regular maintenance and inspections of caps would be required. For groundwater outside the barrier wall, GW-2 is the least effective for reducing off-property contaminant levels, and GW-3 is the most effective and permanent, given the uncertainty about whether GW-4 can achieve RAOs.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Evaluates a remedial alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of residual contamination remaining.

No alternatives achieve reduction of toxicity, mobility, or volume through treatment, except for extracted groundwater, which is treated in an onsite water treatment system prior to discharge. Thus, for groundwater outside the barrier wall, GW-3 is the only alternative that meets the preference for treatment.

Short-term Effectiveness

Considers the length of time needed to implement a remedial alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

All soil alternatives involve excavation, which presents short-term exposure to workers through contact with contaminated soils. Alternative SO-4 presents a higher short-term risk than other alternatives because more materials would be excavated and materials would be trucked offsite. For groundwater, GW-4 presents the highest short-term risk due to construction of the permeable reactive barrier. GW-2 (institutional controls) presents the least short-term risk because no active remediation activities would occur. BW-2 has the highest short-term risk (moderate worker exposure), followed by BW-3 and BW-4 (low worker exposure).

Implementability

Considers the technical and administrative feasibility of implementing a remedial alternative, such as relative availability of goods and services. This criterion also considers whether the technology has been used successfully at other similar sites.

All soil and groundwater alternatives use technologies that are readily available and generally proven, except for GW-4 (permeable reactive barrier). GW-4 would require additional studies and modeling, including a determination of whether the site has sufficient hydraulic gradient to maintain flow through gates.

Cost

Includes estimated capital and operation and maintenance costs. Costs are expected to be accurate within a range of +50 to -30 percent.

Costs are summarized in Table 3. For soils outside the barrier wall, alternative SO-2 is the least costly, SO-3 is in the middle, and SO-4 is the most costly. Alternative GW-2 is least costly, but the time frame required to achieve the Remedial Action Objectives is excessive (hundreds of years). Alternative GW-3 is in the middle. GW-4 is very costly and the time frame required to achieve RAOs is long to very long. Alternatives BW-2, BW-3, and BW-4 are generally similar in cost.

State/Support Agency Acceptance

Considers whether the State supports EPA's analyses and recommendations of the RI/FS and the Proposed Plan.

The State of Oregon Department of Environmental Quality supports the preferred alternative. DEQ is still evaluating whether the groundwater treatment system outside the barrier wall is necessary. DEQ is also continuing to evaluate the risks outside the West Facility to determine if some type of action is required in these areas under State of Oregon law.

Community Acceptance

Considers whether the local community agrees with the EPA's analyses and recommendations of the RI/FS and the Proposed Plan.

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the ROD.

SUMMARY OF PREFERRED ALTERNATIVE

EPA has chosen a preferred alternative for the TLT site. The proposed remedy, which is a combination of Soil Alternative SO-2, Groundwater Alternative GW-3, and Barrier Wall Alternative BW-4, includes the following actions:

- Excavation and consolidation of contaminated soils from within the West Facility and placement of excavated soils under an asphalt cap, possibly in the northeast corner of the property. If cost-effective, excess soil that is not placed onsite may be sent offsite to an acceptable disposal facility.
- Continued operation and maintenance of the barrier wall system, including extraction and treatment of groundwater from within the barrier wall
- Construction of a new 4.6-acre engineered asphalt cap above the existing barrier wall.
- Extraction of PCP-contaminated groundwater from areas outside the barrier wall and treatment of that groundwater in the existing water treatment system at the site. Pending ongoing technical evaluations, this alternative may be omitted from the final remedy.
- Implementation of institutional controls to ensure protection of the remedy and current and future use by onsite workers.
- Long-term monitoring as necessary to ensure protection of human health and the environment.

The preferred soil alternative was selected over other alternatives because it is readily implementable, is expected to achieve substantial and long-term risk reduction through containment, and is cost-effective. Other alternatives are much more costly and the costs may not be not proportional to the overall increase in protectiveness. The preferred alternative is also consistent with current and future reasonably anticipated use at the site.

The preferred alternative for groundwater outside the barrier wall (extraction and treatment) was selected over other alternatives because it appears to be implementable, cost-effective, and may minimize off-site migration of the PCP plume, which would provide more protection for the river. Also, because the contaminant plume outside the barrier wall is small and contains a finite mass of contaminants, groundwater extraction should result in restoring the aquifer outside the barrier wall relatively quickly. EPA is currently performing a technical review of this alternative, and if it is determined to be impracticable, Alternative GW-2 will be selected. Other alternatives (e.g., permeable reactive barrier) are much more costly and may not be technically feasible for the site.

The preferred alternative for media inside the barrier wall (installation of a high-quality permanent asphalt cap) was selected over other alternatives because this cap will have greater durability, and require less maintenance than the standard asphalt or concrete caps proposed in the other alternatives.

The combination of these alternatives is recommended because it is protective of human health and the environment, it reduces the risk within a reasonable time frame, is practicable and cost-effective, and provides for long-term reliability of the remedy. The Preferred Alternative satisfies the preference for treatment as a principal element of the remedy because extracted groundwater from within the barrier wall system is being treated.

The total capital cost to construct the preferred alternative is estimated to be $2.7 million. The present value of the total cost of construction plus operations and maintenance is $5.7 million. Construction could be completed in one construction season.

EPA actions at Superfund sites are generally funded through federal funds, state funds, and/or contributions required from responsible or other party agreements. EPA is currently evaluating funding shares and responsibilities on this project. Certain activities (e.g., cap inspection and maintenance, extraction and treatment of groundwater from within the barrier wall) will be implemented by PWPO pursuant to a 2002 Prospective Purchasers Agreement with EPA.

Based on information available at this time, EPA and the DEQ believe the preferred alternative would be protective of human health and the environment, comply with state and federal regulations, be cost-effective, and utilize permanent

solutions and alternative treatment technology or resource recovery technologies to the maximum extent practicable for this site.

The preferred alternative could change based on public comment or new information.

COMMUNITY PARTICIPATION

EPA has strived to ensure that community members have adequate information about the site to be informed participants in the decision-making process. EPA must meet CERCLA requirements for public participation, including releasing and providing a public comment period on the Proposed Plan.

Table 1
Potential Human Health Exposure Routes Evaluated
Taylor Lumber and Treating Superfund Site

Primary Exposure Area	Receptors/Scenarios	Exposure Areas	Potential Exposure Routes
On-property Soil	Current on-property worker; Current on-property trench worker	West Facility	Incidental soil ingestion, skin contact, dust inhalation
On-property Soil	Hypothetical future on-property worker Hypothetical future on-property excavation worker	Treated Pole Storage and Treatment Plant Areas White Pole Storage Area Truck Shop Area Soil Storage Cells	Incidental soil ingestion, skin contact, dust inhalation
Off-property Soil	Current and future off-property residential Current and future off-property recreational user	Residential yards Off-property ditches	Incidental soil ingestion, skin contact, dust inhalation
On-property Groundwater	Future on-property hypothetical residential	On-property groundwater inside the barrier wall On-property groundwater outside the barrier wall	Ingestion, skin contact, vapor inhalation
Off-property Groundwater	Current and future off-property residential	Off-property groundwater	Ingestion, skin contact, vapor inhalation
Surface Water and Sediment	Current and future off-property recreational and tribal user	Surface water and sediment in South Yamhill River or Rock Creek Surface water in South Yamhill River or Rock Creek	Incidental ingestion, skin contact Fish ingestion

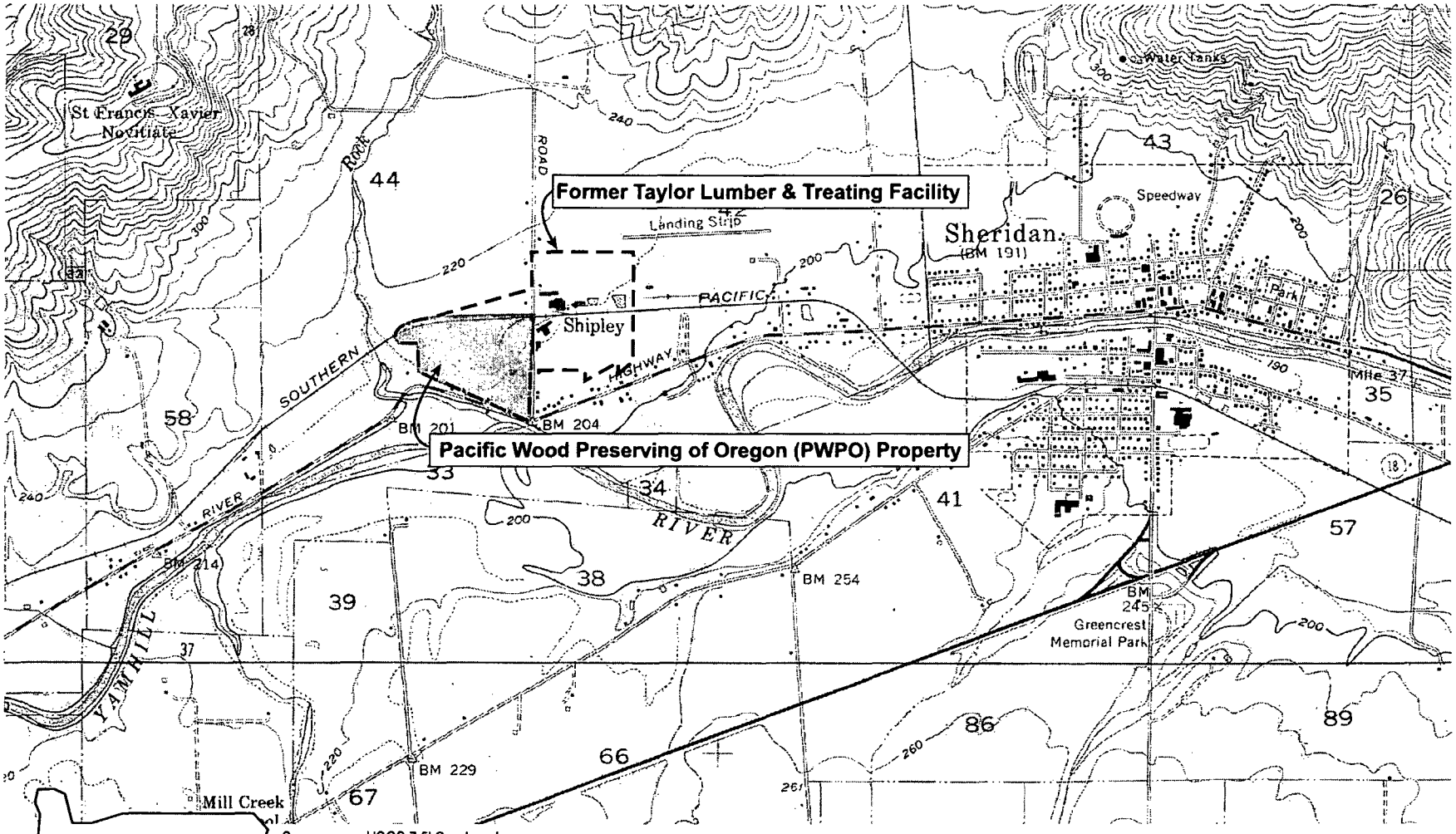
Table 2
Potential Ecological Exposure Routes Evaluated
Taylor Lumber and Treating Superfund Site

Receptor/Scenario	Exposure Point	Potential Exposure Routes
Mammalian and avian wildlife (e.g., deer mouse, robin, red fox)	Surface soil (ditches); Surface water (South Yamhill River and Rock Creek)	Incidental ingestion, skin contact, and bioaccumulation
Terrestrial vegetation (e.g., weeds)	Surface soil (ditches)	Root uptake
Terrestrial invertebrates (e.g., earthworm)	Surface soil (ditches)	Direct contact, ingestion
Aquatic organisms (e.g., midges, fish)	Surface water in Rock Creek and South Yamhill River	Direct contact, ingestion
Aquatic and hyporheic organisms	Off-property groundwater	Direct contact, ingestion
Benthic organisms (e.g., snail, clam)	Sediment in Rock Creek and South Yamhill River	Direct contact, ingestion

Table 3
Cost Estimates for Remedial Alternatives
Taylor Lumber and Treating Superfund Site

Cost Estimates for Remedial Alternatives				
Alternative	Estimated Capital Cost ($ Millions)	Estimated Operation & Maintenance Cost ($ Millions)	Estimated Time to Construct	Estimated Time to Achieve RAOs
SO-2	1.7	0.9	1 yr	short
SO-3	5.7	2.9	2 yr	short
SO-4	25	1.6	2 yr	short
GW-2	0	0.12	1 yr	very long
GW-3	0.165	0.327	2 yr	short
GW-4	0.641	0.302	2 yr	long to very long
BW-2	1.6	1.8	2 yr	short
BW-3	1.1	1.8	2 yr	short
BW-4	0.8	1.8	2 yr	short

Notes:
Cleanup time and time to achieve RAO's:
Short = less than 5 years
Medium = 5 to 30 years
Long = 30 to 100 years
Very long = over 100 years



Source: USGS 7.5' Quadrangle
Sheridan, Oregon

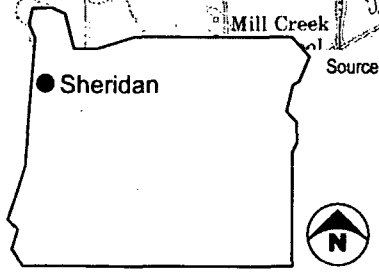
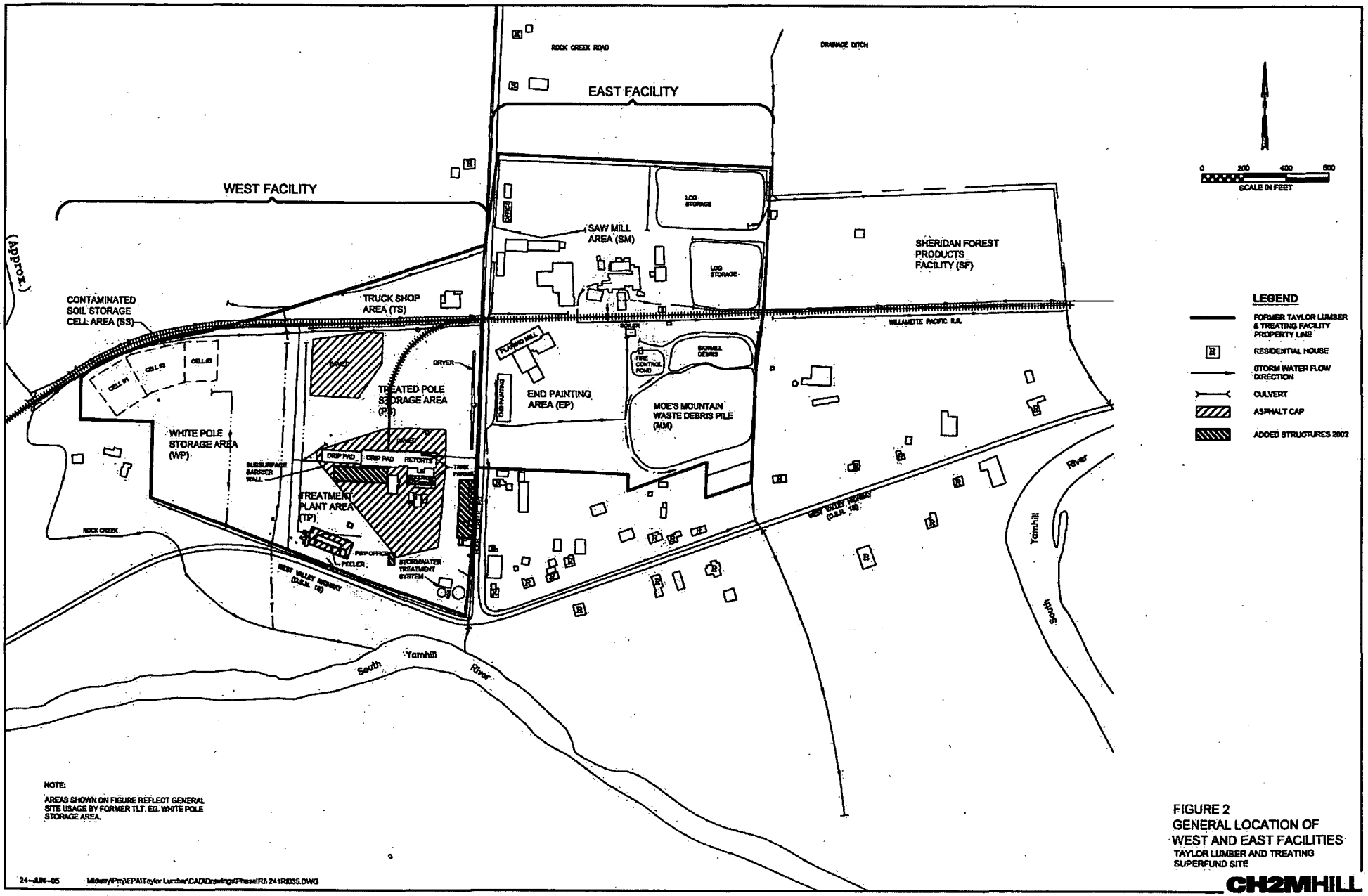


FIGURE 1
SITE VICINITY MAP
TAYLOR LUMBER AND TREATING SUPERFUND SITE
SHERIDAN, OREGON

CH2MHILL

E062005001CVO-TYLR_100_04 184362 PR.01 06/07/05 amh



NOTE:

AREAS SHOWN ON FIGURE REFLECT GENERAL SITE USAGE BY FORMER TLT. EG. WHITE POLE STORAGE AREA.

FIGURE 2
GENERAL LOCATION OF WEST AND EAST FACILITIES
TAYLOR LUMBER AND TREATING SUPERFUND SITE

24-JUN-05 Midway\Proj\EPA\Taylor Lumber\CAD\Drawings\Phase\RA 241R035.DWG

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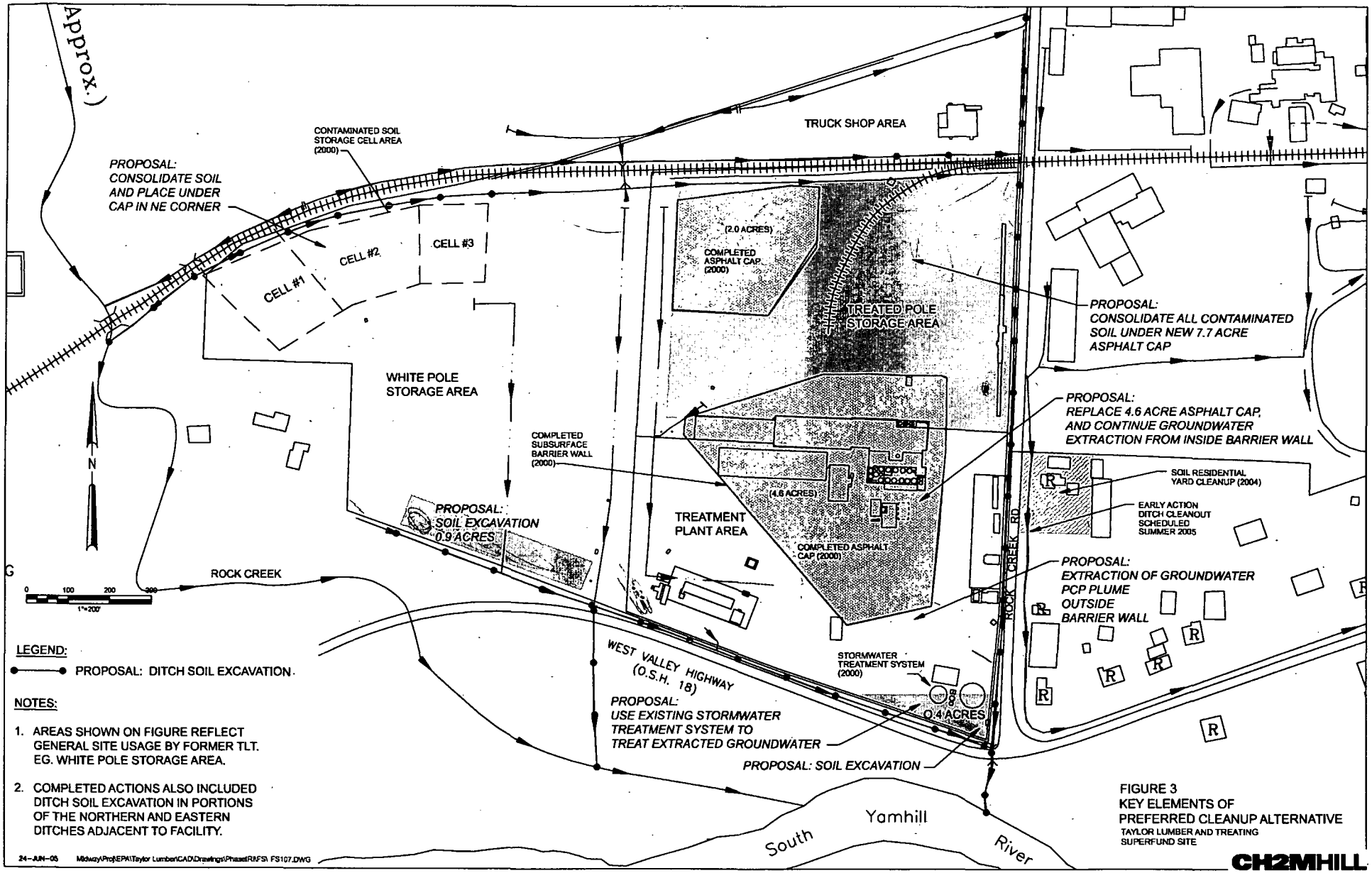

FIGURE 3
KEY ELEMENTS OF PREFERRED CLEANUP ALTERNATIVE
TAYLOR LUMBER AND TREATING SUPERFUND SITE

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